What is claimed is:

1. A sensor fusion apparatus for optical and magnetic motion capture systems, in a motion capture system for an animation of a motion capture object such as a person or a moving object in a three-dimensional virtual space, etc., said sensor fusion apparatus comprising:

an optical motion capture unit for performing an optical motion capture for the motion capture object, and obtaining an optical marker signal;

a magnetic motion capture unit for performing a magnetic motion capture for the motion capture object, and gaining a magnetic sensor signal;

a virtual optical marker signal converting unit for converting the magnetic sensor signal obtained through the magnetic motion capture unit into a corresponding optical marker signal, and acquiring a virtual optical marker signal;

a system identification unit for modeling a relation between the virtual optical marker signal gained through the virtual optical signal converting unit and the optical marker signal obtained through the optical motion capture unit, to a dynamic model through a system identification; and

a signal outputting unit for outputting the optical marker signal gained through the optical motion capture unit, as it is, at a normally operating section of the optical motion capture system, and outputting a dynamically modeled signal gotten through the system identification unit at an

abnormally operating section thereof, according to a normal or abnormal state of the optical marker signal.

2. The apparatus as recited in claim 1, further comprising a post processing unit for regarding an output signal outputted from the signal outputting unit, as the optical marker signal, and performing a general optical motion capture post processing procedure.

3. The apparatus as recited in claim 2, further comprising a filtering unit for filtering the output signal of the signal outputting unit before the post processing procedure performed in the post processing unit, to eliminate an unnecessary high-frequency component from the output signal of the signal outputting unit and provide a signal smoothly.

4. The apparatus as recited in claim 1, wherein said virtual optical signal converting unit detects a position of a virtual optical marker corresponding to a magnetic sensor through a positional and rotational conversion, by using a relative position and orientation of an optical marker and a magnetic sensor stuck to the motion capture object.

5. The apparatus as recited in claim 4, wherein said system identification unit estimates the optical marker signal through the magnetic sensor signal and the dynamic model even in case that there does not exist the optical marker signal,

by modeling the relation between the optical marker signal and the magnetic sensor signal(preferably, by providing the virtual optical marker signal as an input and the optical marker signal as an output) to the dynamic model through a system identification method.

6. A sensor fusion method for optical and magnetic motion capture systems, in a motion capture system for an animation of a motion capture object such as a person or a moving object in a three-dimensional virtual space, etc., said sensor fusion method comprising:

a first step of obtaining an optical marker signal and a magnetic sensor signal for the motion capture object;

a second step of converting the magnetic sensor signal into a corresponding optical marker signal, and acquiring a virtual optical marker signal;

a third step of modeling a relation between the virtual optical marker signal and the optical marker signal to a dynamic model through a system identification; and

a fourth step of using the optical marker signal as it is, when the optical marker signal is normal, and using a signal gained by inputting the virtual optical signal into the dynamic model, as a usage for a correction of the optical marker signal, by using the dynamic model when the optical marker signals are discontinuous, according to a normal or abnormal state of the optical marker signal.

7. The method as recited in claim 6, further comprising a fifth step of regarding an output signal outputted from the fourth step, as the optical marker signal, and performing a general optical motion capture post processing procedure.

8. The method as recited in claim 7, further comprising a sixth step of filtering the output signal before the post processing procedure, to eliminate an unnecessary high-frequency component from the output signal outputted from said fourth step and provide a signal smoothly.

9. The method as recited in claims 6, wherein in said second step, a position of a virtual optical marker corresponding to a magnetic sensor is detected through a positional and rotational conversion, by using a relative position and orientation of an optical marker and the magnetic sensor stuck to the motion capture object.

10. A record medium capable of being read through a computer having a writing of a program, in a sensor fusion apparatus having a processor, which is provided for the sake of a sensor fusion in a motion capture system for an animation of a motion capture object such as a person or a moving object in a three-dimensional virtual space, etc., said record medium characterized in that said program is provided to realize,

a first function of obtaining an optical marker signal and a magnetic sensor signal for the motion capture object;

a second function of converting the magnetic sensor signal into a corresponding optical marker signal, and acquiring a virtual optical marker signal;

a third function of modeling a relation between the virtual optical marker signal and the optical marker signal to a dynamic model through a system identification; and

a fourth function of using the optical marker signal as it is, when the optical marker signal is normal, and using a signal gained by inputting the virtual optical signal into the dynamic model, as a usage for a correction of the optical marker signal, by using the dynamic model when the optical marker signals are discontinuous, according to a normal or abnormal state of the optical marker signal.

11. The record medium as recited in claim 10, characterized in that said program is provided to further realize a fifth function of regarding an output signal outputted from the fourth function, as the optical marker signal, and performing a general optical motion capture post processing procedure.